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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,081	05/03/2006	Sverker Hartwig	AC-110	4774
7590	02/11/2011		EXAMINER	
Mark P. Stone 50 Broadway Hawthorne, NY 10532			ANDRISH, SEAN D	
			ART UNIT	PAPER NUMBER
			3672	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,081

Applicant(s)

HARTWIG ET AL.

Examiner

Sean Andrish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/24/2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1 - 7, 10 - 17, and 20 - 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Underground Drilling and Loading Handbook - Tamrock*; Tamrock Corp. 1997 (Tamrock).

Regarding claims 1, 11, and 21, Tamrock discloses a rock drilling apparatus comprising: a main power supply means for supplying power for the rock drilling process, which includes at least the sub-processes of flushing (pg. 38) and at least one of percussion (pg. 34) and rotation (pgs. 36 - 37), the method comprising the steps of: adjusting flush power directly in dependence on a value representing hole depth (page 38, paragraph 2); and controlling the flush power and at least one of the percussion power and rotational power (page 32, paragraph 3) such that total power consumption of each sub-process is controlled. Tamrock teaches optimizing power

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consumption (rock breakage efficiency) by optimizing the load on the bit (percussion), bit rotation, and flushing. Although Tamrock teaches optimizing the power consumption of each sub-process, Tamrock does not explicitly recite controlling the power consumption of each sub-process simultaneously. However, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have controlled the power of each sub-process simultaneously as a matter of design choice. Tamrock fails to disclose adjusting flush power during the actual drilling of the hole. Tamrock teaches adjusting a parameter (feed force) during the actual drilling process (page 35, second paragraph) and it would have been considered obvious to one of ordinary skill in the art to adjust other parameters, such as flush power, during the actual drilling of the hole to optimize power consumption during the drilling process.

Regarding claims 2 and 12, Tamrock further discloses flush power is at least partly adjusted as a function of hole diameter (hole size) (pg. 38, paragraph 2).

Regarding claims 3, 13, 22, and 23, Tamrock discloses all of the claim limitation(s) except for explicitly teaching power output is kept at or below a predetermined level. It would have been considered obvious to maintain power output at or below a predetermined level to reduce the operational costs of the drilling operation.

Regarding claims 4 and 14, Tamrock further discloses flow of the flush medium is substantially constant (page 38, paragraph 3).

Regarding claims 5, 15, 24, and 25, Tamrock further discloses the flow of the flush medium is increased with increasing hole depth (compensating for air pressure loss with increasing hole depth) (page 38, paragraph 3).

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Regarding claims 6, 7, 16, and 17, Tamrock further discloses continuous measurement of hole depth and flow of flush medium (page 38, paragraphs 2 and 3; Table 3-2).

Regarding claims 10 and 20, Tamrock further discloses a hydraulic top hammer (page 34, column 2).

4. Claims 8, 9, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamrock in view of Hobhouse (3,550,697).

Regarding claims 8 and 18, Tamrock discloses all of the claim limitation(s) except for computer means. Hobhouse teaches determining flush power requirements by computer means (column 3, lines 11 - 14), and it would have been considered obvious to use a known data processing system such as a computer to perform the computational analysis required to determine flush power requirements.

Regarding claims 9 and 19, Tamrock discloses all of the claim limitation(s) except for computer means connected to a memory containing stored data comprising lists at least partly including hole depth, type of drill bit, and type of drill rod. Hobhouse teaches computer means are connected to a memory containing stored data related to hole depth (column 2, lines 47 - 51), the computer means being used to adjust drilling speed, torque, weight-on-bit, and the associated required mud-flush. It would have been considered obvious to use a known data processing system such as a computer having memory containing stored data related to hole depth to perform the computational analysis required to determine flush power requirements.

Response to Arguments

5. Applicant's arguments filed 24 January 2011 have been fully considered but they are not persuasive. Applicant argues that Tamrock fails to teach adjusting flush power during the actual

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drilling of the hole. Examiner replies that Tamrock teaches adjusting a parameter (feed force) during the actual drilling process, and it would have been considered obvious to one of ordinary skill in the art to adjust other parameters, such as flush power, during the actual drilling of the hole to optimize power consumption during the drilling process.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Andrish whose telephone number is (571)270-3098. The examiner can normally be reached on Mon - Fri, 7:30am - 5:00pm, Alternate Fri off, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on (571) 272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David J. Bagnell/
Supervisory Patent Examiner, Art Unit 3672

SDA
2/9/2011

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